CLAIMS

1. A compound semiconductor light-emitting device having a light-emitting layer on a substrate, wherein at least a part of a substrate portion of the device side surface has recessed portions in a side direction of the device.

2. A light-emitting device according to claim 1, wherein at least a part of a compound semiconductor portion of the device side surface has recessed portions in a side direction of the device.

3. A light-emitting device according to claim 1 or 2, wherein the light-emitting layer comprises an n-type or p-type compound semiconductor and is of the pn junction type.

4. A light-emitting device according to any one of claims 1 to 3, wherein the substrate is selected from the group consisting of a sapphire, a SiC and a III-V Group compound semiconductor single crystal.

5. A light-emitting device according to any one of claims 1 to 4, wherein recessed portions are existing maintaining a distance of 4 to 40 μm.

6. A light-emitting device according to any one of claims 1 to 5, wherein the recessed portions have a depth of 0.5 to 10 μm and a width of 1 to 20 μm.

7. A light-emitting device according to any one of claims 1 to 6, wherein the compound semiconductor light-emitting device is of the flip-chip type.

8. A method of producing compound semiconductor light-emitting device comprising the steps of:

(a) forming a compound semiconductor layer including a light-emitting layer of an n-type or p-type compound semiconductor on a wafer that serves as a substrate,

(b) arranging a negative electrode and a positive electrode at predetermined positions for passing a drive current through the light-emitting layer,

(c) forming a separation zone for separating

the individual light-emitting devices,

(d) perforating many small holes linearly in the wafer that serves as the substrate along the separation zone, and

(e) dividing the wafer into individual light-emitting devices along the separation zone.

9. A method of production according to claim 8, wherein the small holes are formed by a laser method.

10. A method of production according to claim 8 or 9, wherein the opening diameter of the small holes is 1 to 20 μm.

11. A method of production according to any one of claims 8 to 10, wherein the depth of the small holes is 1/10 to 3/4 of the thickness of the substrate.

12. A method of production according to any one of claims 8 to 11, wherein the distance between the small holes is 4 to 40 μm.

13. A method of production according to any one of claims 8 to 12, wherein the small holes are perforated from the side of the compound semiconductor layer formed on the front surface of the substrate.

14. A method of production according to any one of claims 8 to 13, wherein the small holes are perforated from the back surface of the substrate.

15. A method of production according to claim 14, wherein the depth of the small holes in the back surface of the substrate is deeper than that of the small holes in the front surface of the substrate.

16. A method of production according to any one of claims 8 to 15, wherein the small holes are periodically perforated.

17. A method of producing compound semiconductor light-emitting device comprising the steps of:

(a) forming a compound semiconductor layer including a light-emitting layer of an n-type or p-type compound semiconductor on a wafer that serves as a substrate,

(b) arranging a negative electrode and a positive electrode at predetermined positions for flowing a drive current to the light-emitting layer,

(c) forming a separation zone for separation into the individual light-emitting devices,

(d) projecting intermittently a laser beam setting a focal position in the wafer serving as the substrates to linearly scan along the separation zone, and

(e) dividing the wafer into individual light-emitting devices along the separation zone.

18. A lamp comprising a compound semiconductor light-emitting device of any one of claims 1 to 7.

19. A source of light comprising a lamp of claim 18.